QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

CE/QA/PR/634/2022-23, DATE: 6/10/23		
Name of Work	:	Improvements and Restoration of Roads in Ward No.06 (Package 02) (Package Consists of 11 works) Estimated cost 1100.00 Lakhs
Job Code	:	006-23-000001
Bill No.& Amount	:	**2nd&Part Bill.Rs. 4,92,33,289.00(Including GST)**
Name of Agency	:	**M/S CGC Infra Projects Pvt Ltd**
Type of Test Performed	:	Bitumen Content and Gradation test as per Table 500.07&Table 500.17 MoRTH V Revision.
Materials on which Tests Was Performed	:	1. Bituminous Macadam (Grade II) 2. Bituminous Concrete (Grade II)
Officers present during inspection	:	1. Sri. Mahantesh AE- Ward No 06 2. Sri .K.M.Yadukrishna AEE-Quality Assurance
Project Management Consultants	:	Civil Pro
Observations	:	➢ Bitumen content & Gradation test was conducted by Project Management Consultants representative at random locations in presence of AE(Ward No.06) along withAEE QA division. ➢ The Bitumen content & Gradation Test were conducted for BM (Grade II) & BC (Grade-II). The readings and results are recorded by the PMC consultants. ➢ The readings of Bitumen Content & Gradation Test results are tabulated and analysis of test results done by PMC is here by furnished. ➢ The location wise test results are reproduced in the tables shown below.
Test Locations	:	Location 1:Munikempanna Layout (High tension line Road, House No 14, Main Road) Location 2:Kaveri Layout(3rd Cross Road, House No.53, Apple Apartment Opposite Road, Opp SaiAnandNivasa, 2nd Cross , H.No. 71, ManjulaVishwanath) Location 3:Defence Layout (2nd Cross Road Near SWD,2nd Stage, 3rd Cross Road, House No 31, 2nd Stage Main Road, H.No:633, KalpavrukshaNilaya)

K.M. 6/10/23

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Table-01: Bitumen Content and gradation Test in Munikempanna Layout at random locations

BM- (GRADE-II)

Landmark/Location	High tension line Road, House No 14, Main Road
Description	Trial 1
1.Initial weight of sample (gms) w1	338
2. final weight of sample after extraction (gms) w2	328
3. Initial weight of filter paper (gms) w3	4
4. Final weight of filter paper (gms) w4	6
5. Increased weight of filter paper (gms) w5=(w4-w3)	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	12
7. Bitumen content in % (w6/w1)x100	3.55

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.07
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	% Passing	
26.5	0	0	0.0	100.0	100
19	12	12	3.7	96.3	90-100
13.2	56	68	20.7	79.3	56-88
4.75	170	238	72.6	27.4	16-36
2.36	55	293	89.3	10.7	4-19
0.3	19	312	95.1	4.9	2-10
0.075	12	324	98.8	1.2	0-8

Table-02: Bitumen Content and gradation Test in Munikempanna Layout at random locations

BC- (GRADE-II)

Landmark/Location	High tension line Road, House No 14, Main Road
Description	Trial 1
1.Initial weight of sample (gms) w1	328
2. final weight of sample after extraction (gms) w2	312
3. Initial weight of filter paper (gms) w3	4
4. Final weight of filter paper (gms) w4	6
5. Increased weight of filter paper (gms) w5=(w4-w3)	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	18
7. Bitumen content in % (w6/w1)x100	5.49

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	8	8	2.6	97.4	90-100
9.5	60	68	21.8	78.2	70-88
4.75	75	143	45.8	54.2	53-71
2.36	30	173	55.4	44.6	42-58
1.18	29	202	64.7	35.3	34-48
0.6	11	213	68.3	31.7	26-38
0.3	32	245	78.5	21.5	18-28
0.15	22	267	85.6	14.4	12-20
0.075	18	285	91.3	8.7	4-10

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Table-03: Bitumen Content and gradation Test in Kaveri Layout at random locations
BM- (GRADE-II)

Landmark/Location	3rd Cross Road, House No.53	Apple Apartment Opposite Road, Opp SaiAnandNivasa,	2nd Cross ,H.No. 71, ManjuiaVishwanath
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	333	342	337
2. final weight of sample after extraction (gms) w2	323.5	332	327.5
3. Initial weight of filter paper (gms) w3	4	4	4
4. Final weight of filter paper (gms) w4	6	6	6
5. Increased weight of filter paper (gms) w5=(w4-w3)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	11.5	12	11.5
7. Bitumen content in % (w6/w1)x100	3.45	3.51	3.41
8.Average	3.46		

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.07
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative % Passing	
26.5	0	0	0.0	100.0	100
19	12	12	3.7	96.3	90-100
13.2	53	65	20.1	79.9	56-88
4.75	150	215	66.5	33.5	16-36
2.36	60	275	85.0	15.0	4-19
0.3	25	300	92.7	7.3	2-10
0.075	13.5	313.5	96.9	3.1	0-8

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.07
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
26.5	0	0	0.0	100.0	100
19	15	15	4.5	95.5	90-100
13.2	60	75	22.6	77.4	56-88
4.75	145	220	66.3	33.7	16-36
2.36	56	276	83.1	16.9	4-19
0.3	26	302	91.0	9.0	2-10
0.075	20	322	97.0	3.0	0-8

SIEVE SIZE mm	Trail 3				Requirement as per MORTH table 500.07
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
26.5	0	0	0.0	100.0	100
19	14	14	4.3	95.7	90-100
13.2	41	55	16.8	83.2	56-88
4.75	160	215	65.6	34.4	16-36
2.36	61	276	84.3	15.7	4-19
0.3	24	300	91.6	8.4	2-10
0.075	21.5	321.5	98.2	1.8	0-8

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Table-04: Bitumen Content and gradation Test Results for Kaveri Layout at random locations
BC- (GRADE-II)

Landmark/Location	3rd Cross Road, House No.53	Apple Apartment Opposite Road, Opp SaiAnandNivasa,	2nd Cross ,H.No. 71, ManjulaVishwanath
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	326	331	329
2. final weight of sample after extraction (gms) w2	310	315	313
3. Initial weight of filter paper (gms) w3	4	4	4
4. Final weight of filter paper (gms) w4	6	6	6
5.Increased weight of filter paper (gms) w5=(w4-w3)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	18	18	18
7. Bitumen content in % (w6/w1)x100	5.52	5.44	5.47
8.Average		5.48	

SIEVE SIZE mm	Trail 1 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0.0	100.0	100
13.2	4	4	1.3	98.7	90-100
9.5	52	56	18.1	81.9	70-88
4.75	60	116	37.4	62.6	53-71
2.36	55	171	55.2	44.8	42-58
1.18	29	200	64.5	35.5	34-48
0.6	11	211	68.1	31.9	26-38
0.3	36	247	79.7	20.3	18-28
0.15	22	269	86.8	13.2	12-20
0.075	18	287	92.6	7.4	4-10

SIEVE SIZE mm	Trail 2 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0.0	100.0	100
13.2	12	12	3.8	96.2	90-100
9.5	60	72	22.9	77.1	70-88
4.75	70	142	45.1	54.9	53-71
2.36	37	179	56.8	43.2	42-58
1.18	24	203	64.4	35.6	34-48
0.6	13	216	68.6	31.4	26-38
0.3	33	249	79.0	21.0	18-28
0.15	21	270	85.7	14.3	12-20
0.075	26	296	94.0	6.0	4-10

SIEVE SIZE mm	Trail 3 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0.0	100.0	100
13.2	13	13	4.2	95.8	90-100
9.5	61	74	23.6	76.4	70-88
4.75	58	132	42.2	57.8	53-71
2.36	41	173	55.3	44.7	42-58
1.18	30	203	64.9	35.1	34-48
0.6	14	217	69.3	30.7	26-38
0.3	25	242	77.3	22.7	18-28
0.15	30	272	86.9	13.1	12-20

9/10/23

ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ
ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ
ಮುಖ್ಯ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ

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0.075	21	293	93.6	6.4	

Table-05: Bitumen Content and gradation Test in Defence Layout at random locations
BM- (GRADE-II)

Landmark/Location	2nd Cross Road Near SWD	2nd Stage, 3rd Cross Road, House No 31	2nd Stage Main Road, H.No:633, KalpavrukshaNilaya
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	342	340	344
2. final weight of sample after extraction (gms) w2	332.0	330.0	334.0
3. Initial weight of filter paper (gms) w3	4	4	4
4. Final weight of filter paper (gms) w4	6	6	6
5. Increased weight of filter paper (gms) w5=(w4-w3)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	12	12	12
7. Bitumen content in % (w6/w1)x100	3.51	3.53	3.49
8.Average	3.51		

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.07
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative % Passing	
26.5	0	0	0.0	100.0	100
19	8	8	2.4	97.6	90-100
13.2	50	58	17.5	82.5	56-88
4.75	166	224	67.5	32.5	16-36
2.36	58	282	84.9	15.1	4-19
0.3	26	308	92.8	7.2	2-10
0.075	15	323.0	97.3	2.7	0-8

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.07
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
26.5	0	0	0.0	100.0	100
19	11	11	3.3	96.7	90-100
13.2	59	70	21.2	78.8	56-88
4.75	147	217	65.8	34.2	16-36
2.36	55	272	82.4	17.6	4-19
0.3	28	300	90.9	9.1	2-10
0.075	19	319	96.7	3.3	0-8

SIEVE SIZE mm	Trail 3				Requirement as per MORTH table 500.07
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
26.5	0	0	0.0	100.0	100
19	13	13	3.9	96.1	90-100
13.2	47	60	18.0	82.0	56-88
4.75	158	218	65.3	34.7	16-36
2.36	63	281	84.1	15.9	4-19
0.3	25	306	91.6	8.4	2-10
0.075	18	324.0	97.0	3.0	0-8

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Table-06: Bitumen Content and gradation Test Results for Defence Layoutat random locations
BC- (GRADE-II)

Landmark/Location	2nd Cross Road Near SWD	2nd Stage, 3rd Cross Road, House No 31	2nd Stage Main Road, H.No:633, KalpavrukshaNilaya
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	335	332	338
2. final weight of sample after extraction (gms) w2	318.5	316	321.5
3. Initial weight of filter paper (gms) w3	4	4	4
4. Final weight of filter paper (gms) w4	6	6	6
5.Increased weight of filter paper (gms) w5=(w4-w3)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	18.5	18	18.5
7. Bitumen content in % (w6/w1)x100	5.52	5.42	5.47
8.Average		5.47	

SIEVE SIZE mm	Trail 1 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0.0	100.0	100
13.2	11	11	3.5	96.5	90-100
9.5	56	67	21.0	79.0	70-88
4.75	58	125	39.2	60.8	53-71
2.36	52	177	55.6	44.4	42-58
1.18	26	203	63.7	36.3	34-48
0.6	13	216	67.8	32.2	26-38
0.3	31	247	77.6	22.4	18-28
0.15	23	270	84.8	15.2	12-20
0.075	19.5	289.5	90.9	9.1	4-10

SIEVE SIZE mm	Trail 2 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0.0	100.0	100
13.2	15	15	4.7	95.3	90-100
9.5	57	72	22.8	77.2	70-88
4.75	63	135	42.7	57.3	53-71
2.36	33	168	53.2	46.8	42-58
1.18	26	194	61.4	38.6	34-48
0.6	19	213	67.4	32.6	26-38
0.3	33	246	77.8	22.2	18-28
0.15	28	274	86.7	13.3	12-20
0.075	21	295	93.4	6.6	4-10

SIEVE SIZE mm	Trail 3 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0.0	100.0	100
13.2	10	10	3.1	96.9	90-100
9.5	63	73	22.7	77.3	70-88
4.75	52	125	38.9	61.1	53-71
2.36	44	169	52.6	47.4	42-58
1.18	31	200	62.2	37.8	34-48
0.6	20	220	68.4	31.6	26-38
0.3	22	242	75.3	24.7	18-28
0.15	33	275	85.5	14.5	12-20

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0.075	26.5	301.5	93.8	6.2	

Conclusion:

The file containing **2nd&Part bill** has been submitted for the above work to QA department on 31.07.2023 requesting for spot inspection. Engineers of QA/QC division have visited the work spot on 27.09.2023

PMC team was instructed to assess the Gradation & Bitumen content test for BM (Grade II)&BC (Grade-II) on Asphalted road . The Bitumen Content and Gradation Tests were conducted by PMC in presence of engineer in charge of work.

From the test results furnished by PMC, it is concluded that the results of the sampiescoiiected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Engineer in charge of work shall ensure that work executed as per this bill is not claimed in any other bill /work or else Engineer in charge of work shall be held responsible.

Further, QA/QC directs the Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

All materials or work not conforming to the requirements of the specifications shall be considered unacceptable and rejected. The unacceptable materials or works that are rejected shall be immediately removed unless the defects are corrected and approved by the engineer in-charge of work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note: -

This report by QA/QC is pertaining to the work carried out in **2nd&Part Bill** only.

Engineer in charge of work shall display details of work, work code, cost of project, start and completion date, and information of Engineer in charge of work with contact numbers at work spot.

Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP), The same shall be rectified immediately on top priority without fail.

Engineer in charge of work shall ensure that any changes/ modification/change in location in the sanctioned estimate to be got approved by competent authority.

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II & PART BILL

JOB NO. 006-23-000001

GPS Map Camera
Byatarayanapura CMC and OG Part, Karnataka, India
Dasarahalli BBMP Office, Prasara Bharathi Layout, Ayyappa Layout, Dasarahalli, Bengaluru, Byatarayanapura CMC and OG Part, Karnataka 560024, India
Lat 13.054581°
Long 77.611855°
27/09/23 04:23 PM GMT +05:30
Google

GPS Map Camera
Bengaluru, Karnataka, India
3, 20th Cross Rd, Kaveri Layout, Mariyannapalya, Hebbal Kempapura, Bengaluru, Byatarayanapura CMC and OG Part, Karnataka 560024, India
Lat 13.053836°
Long 77.609195°
27/09/23 04:50 PM GMT +05:30
Google

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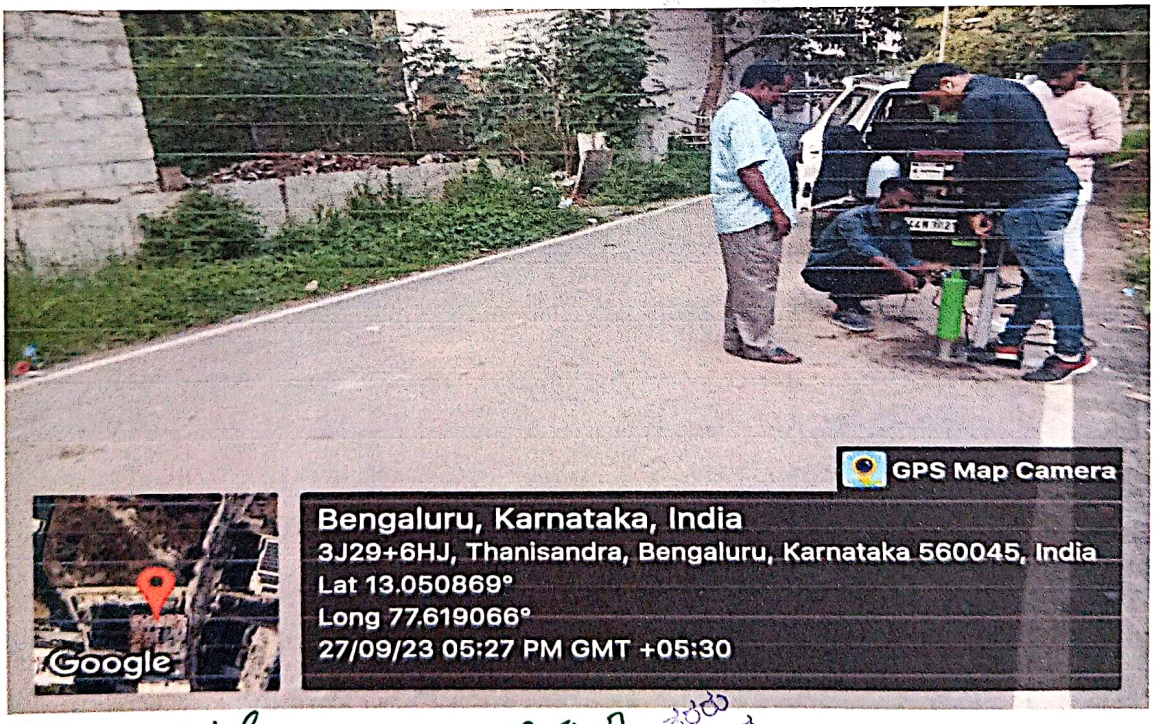
II & PART BILL

JOB NO. 006-23 – 00000/

GPS Map Camera
Bengaluru, Karnataka, India
55, Kaveri Layout, Mariyannapalya, Hebbal Kempapura, Bengaluru, Byatarayanapura CMC and OG Part, Karnataka 560024, India
Lat 13.053314°
Long 77.61095°
27/09/23 05:16 PM GMT +05:30
Google



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